NASA testing low visibility operations

NASA's new Boeing 757 research aircraft is being used to test prototype systems designed to improve the efficiency of airport surface operations in low-visibility conditions.

Thus far, agency pilots have logged 22 flights with the systems, which integrate differential global positioning system data and positioning information from the aircraft's own inertial navigation system to tell pilots and flight controllers where the aircraft is as it taxis in bad weather on the ground. The tests are being conducted at Hartsfield-Atlanta International Airport.

NASA intends to demonstrate the program to about 100 "stakeholders" - airline and industry executives and officials of the FAA and other government agencies - to show the systems' potential for reducing delays caused by poor weather and other low-visibility conditions on the ground.

The tests will also validate simulator findings and provide hard numbers on system speed and accuracy that regulators can use to set safety requirements and standards.

Steven Young of NASA's Langley Research Center, who is lead systems engineer for the Atlanta flight tests pointed out that the prototype system under testing incorporates NASA's Low Visibility Landing And Surface Operations (LVLASO) system

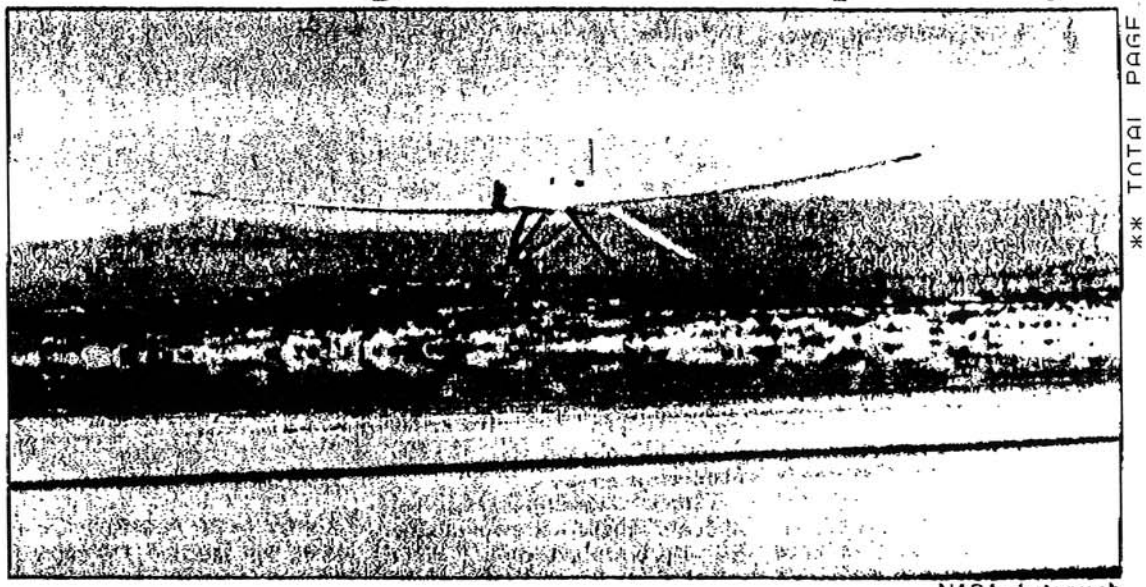
Altus demonstrates high-altitude capability

A remotely piloted aircraft powered by a turbocharged piston engine has demonstrated the ability to cruise at altitudes above 40,000 feet during recent flights from NASA's Dryden Flight Research Center, Edwards, Calif.

The single-engine Altus, one of two such unmanned vehicles built by General Atomics Aeronautical Systems, Inc., San Diego, Calif., reached an altitude of 43,500 feet while carrying a 300-pound simulated science payload during its last flight in the series Aug. 15 in restricted airspace over Edwards Air Force Base. It also exceeded 40,000 feet during its third flight a week earlier, reaching an altitude of 41,600 feet.

The flight tests of the slender-winged, rear-engine Altus were sponsored by the Naval Postgraduate School in Monterey, Calif. As program host, NASA Dryden provided aeronautical range safety services and hangar space to NPS for the brief series, which included four flights over a two-week span.

The Altus in the tests, known as Altus 2, is a sister ship to the Altus 1, which was built by GA/ASI for NASA's Environmental Research Aircraft and Sensor Technology program. The Altus 1 reached an altitude of more than 37,000 feet during a flight from Dryden in August 1996, and set an endurance record of more than 26 hours on a flight conducted by NPS on behalf of the Department of Energy/Sandia National Laboratories last October in Oklahoma. That deployment, in support of the Atmospheric Radiation Measurement-Unmanned Aerospace Vehicle program, saw the Altus 1 fly missions at altitudes above 35,000 feet, although the record endurance flight was flown at lower altitudes.



NASA photograph

The Altus remotely piloted aircraft lands at NASA's Dryden Flight Research Center, Edwards, Calif., follwoing a successful test flight.

The Altus 2 is powered by an 80-horsepower Rotax 912 four-cylinder engine, which is mated to a single-stage turbocharger built by Thermo-Mechanical Systems of Canoga Park, Calif. The Altus 1, which used the same powerplant combination during its flights last year, has been modified to accept a larger, higher-capacity, two-stage turbocharger. It is scheduled to return to Dryden in September for a new series of flights focused on reaching an altitude of 65,000 feet or above, one of the ERAST performance goals.

According to NPS Altus project manager, Mike Duncan, the Altus 2 tests at Dryden were intended to evaluate the performance characteristics of the aircraft at altitudes up to 45,000 feet. He noted that data acquired during the Altus 2 flight tests will benefit the upcoming flight tests of the modified NASA Altus 2 aircraft, as well as other, remotely-piloted aircraft using the same powerplant combinations being developed by NASA under the ERAST program.

GA/ASI's Altus program manager, Jim Taylor, who was in charge of the Altus 2 test series at Dryden, called the flights a "remarkable milestone" which was "just another in a series of successes for the Altus."

John Del Frate, Dryden's deputy project manager for ERAST aircraft development, echoed Taylor's comments, noting that the teamwork of personnel at Dryden, the Air Force Flight Test Center, GA/ASI and NPS contributed to the success of the program.

The Altus 2 will be returning to Oklahoma in September where it will resume flying science missions for the Sandia Labs ARM-UAV studies initiated by the Altus 1 last year. Will Bolton, deputy technical director of the ARM-UAV program for Sandia, said the month-long series of flights will continue research on the effect of atmospheric aerosols, water vapor and clouds on global climate change. Taylor said the ability of the Altus to cruise above 40,000 feet is important since it will enable the craft to remain above commercial traffic during the long-duration Sandia Labs missions.

The two Altus aircraft were developed by General Atomics Aeronautical Systems as high-altitude variants of its Predator unmanned aerial vehicle system, which has been deployed for the U.S. government. The Altus has a wing-span of about 55 feet, is just under 22 feet long and weighs about 1,600 pounds at takeoff.